REMARKS

Applicants have carefully considered the Office Action dated January 23, 2006 and the references cited therein. Applicants provide this Amendment in a sincere effort to place the application in condition for allowance. Accordingly, reconsideration is respectfully requested.

By this amendment, claim 7 has been cancelled and new claim 32 has been added. Claims 1, 3-6, 8-20, 22-27 and 29-32 are pending in the application.

The examiner has indicated that claim 31 has been allowed and that claim 7 contains allowable subject matter. Claim 7 would be allowable if rewritten in independent form to include the limitations of the base claim and any intervening claims. Applicants gratefully acknowledge this indication of allowable subject matter.

Applicants have added new claim 32 which includes the elements of claims 1 and 7, and therefore, claim 7 has been cancelled. Accordingly, applicants' respectfully submit that new claim 32 patentably distinguishes over the reference of record.

The examiner has objected to claims 3, 4, 22, 23, 29 and 30 for depending from cancelled claims. Applicants have amended the preamble of the aforementioned claims in order to correct this informality.

Claims 14-18 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,004,264 to Kozaki et al. ("Kozaki"). The examiner contends that Kozaki teaches a method of determining the life of a system comprising determining a flow rate of a fluid power system, determining the cycle time of the system, integrating the flow rate over the cycle time to determine a diagnostic value, and comparing the diagnostic value to a predetermined value to determine an operational status. Applicants respectfully traverse this rejection to method claim 14.

Claims 14 and 18 have been amended to incorporate elements of the preamble into the body of the claim.

Claim 14 is directed to a method of determining the service life of a cyclic fluid power system. A cycle is a periodically repeating sequence of events. The present invention is directed to a cyclic fluid power system having repeatable cycles. Page 5, Lines 22-23. In a fluid power cyclic system, the actions of the valves and actuators comprising the system are repeated in each cycle. The operation of most processing machines, i.e., packaging machines, printing machines, assembly machines, etc. are cyclic. The actions of the actuators are repeated invariably over and over again. In such cyclic systems, variation in a system parameter between cycles provides useful information in determining the function of the system. Such information, such as flow rate, can be used in order to determine the service life of the components of the system.

In contrast to the invention of claim 14, Kozaki is not directed to a cyclic system. Kozaki's system is a reactive one which depends on external input. The input is generated by a non-deterministic movement of a vehicle's wheels, and the suspension adapts to such input by the operation of cylinder 16. The very purpose of Kozaki's invention is to adapt to outside ever-changing variables. Since the conditions of the road will vary as the vehicle travels, there is no cycle repeatability, which defines a cyclic system. Therefore, Kozaki is not applicable to cyclic systems.

Furthermore, Kozaki does not disclose integrating the flow rate over the cycle time to determine diagnostic value. There is no integration of the flow rate. The examiner has relied on column 8, lines 44-47 for this teaching. However, this portion of Kozaki's specification discusses integrating the distances of movement of a piston of cylinder 16 in order to determine a predicted position. There is no teaching of integrating the flow rate.

Moreover, claim 14 is a method for determining the cycle life of a cyclic fluid power system. Kozaki does not disclose such a method. Instead, the system is used to determine

and predict a position of an actuator. There is no teaching in Kozaki to apply its teaching to determining the service life of a cyclic fluid power system.

In addition, the Office Action in the rejection of Claims 1, 4-6, 8-13, 20 and 22-26, acknowledges that Kozaki does not teach determining the status of the cycle life of a system. This further supports applicants' assertion that claim 14 patentably distinguishes over Kozaki.

Accordingly, applicants respectfully submit that claim 14, and those claims depending therefrom, patentably distinguish over Kozaki.

Applicants also respectfully traverse the rejection of method claim 18. Claim 18 is directed to a method of determining the service life of a cyclic system. Claim 18 includes the steps of sensing a characteristic of a cyclic system to determine a characteristic value. This value is used to determine a diagnostic value. The diagnostic value is compared to a set of known values to determine a performance status of the system relating to the service life of the cyclic system. As set forth above with respect to the patentability of claim 14, Kozaki fails to teach a cyclic system or a method for determining a service life of a cyclic power system. Therefore, Applicants respectfully submit that claim 18, and those claims depending therefrom, patentably distinguish over the references of record.

Claims 1, 4-6, 8-13, 20 and 22-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kozaki in view U.S. Patent Publication 2002/0060175 to Conrad et al. ("Conrad"). (Applicants note that in this portion of the Office Action, the previously cited reference, Metso et al., is stated. However, from reviewing the details of the rejection, it is applicants' understanding that the intended cited reference is Conrad.) The examiner contends that Kozaki teaches a method of determining the life of a system comprising determining a characteristic of this cyclic system to determine a characteristic value wherein the value is a flow rate, determining a cycle time of the cyclic system, applying the flow rate to an algorithm in which the value is integrated over the cycle time to determine a diagnostic value, and comparing the diagnostic value to a predetermined value to determine the system's

status. The examiner further contends that Kozaki does not specify the status being a cycle life of the system.

Conrad has been cited for teaching a method of determining the service life of a system by calculating cycle time and flow rate. The examiner contends it would have been obvious to modify Kozaki so that service life is determined as taught by Conrad. Applicants respectfully traverse the rejection of Claim 1 based on obviousness.

Applicants respectfully submit that there is no motivation in the references or the prior art to combine the cited references. Contrary to the assertions in the Office Action, Kozaki would not be modified in view of the teachings of Conrad to allow service life to be determined. Conrad is directed to a water treatment device and determining the cycle life of a water filter element. Essentially, the time for water to flow through a filter is determined to evaluate the condition of the filter. Conrad ¶67. Alternatively, a flow sensor or pressure sensor can be used. Conrad ¶ 68. When the filter becomes clogged, the flow therethrough decreases, and this is detected. In contrast, Kozaki is directed to controlling the suspension of a vehicle by determining position of a cylinder. There is no teaching to use a filter, or any teaching that flow could be used to determine cycle life in Kozaki. Kozaki's system is completely unrelated to the operation of Conrad. Determining the cycle life of a filter by examining the flow through the filter has no application to Kozaki which is determining the position of a piston to adapt a vehicle's suspension. Applicants respectfully submit that there would be no suggestion or motivation to combine these references.

In addition, the cited combination fails to teach every element of the rejected claim. Claim 1 defines a step of integrating the flow rate over the cycle time to determine a diagnostic value. This value is then used to determine the service life of a system. Neither Kozaki nor Conrad teach integrating the flow rate to determine a diagnostic value. In Kozaki the distances of the piston's movement are integrated, not the flow rate. Column 8, lines 44-47. The results of such integration is not used to determine a diagnostic value to determine the service life of the cyclic system.

Moreover, as set forth above with respect to claim 14, Kozaki fails to teach or suggest a cyclic system as set forth in claim 1.

Accordingly, Applicants' respectfully submit that claim 1, and those claims depending therefrom, patentably distinguish over the references of record.

Applicants further traverse the rejection of claim 20. Claim 20 is directed to an apparatus for determining an operational status of a cyclic fluid power system. A calculating unit is operatively connected to a sensor which senses flow rate. The calculating unit performs a mathematical integration on the flow rate to determine a diagnostic value and compares the value to a predetermined value to determine the service life of the system.

As set forth above with respect to claim 1, there is no motivation to combine Kozaki and Conrad. In addition, the combination fails to teach a calculating unit that performs a mathematical integration on a flow rate to determine a diagnostic value and compares the diagnostic value to a predetermined value to determine the service life of the system. Both Kozaki and Conrad use the flow rate but not the integral of the flow. In Kozaki the flow rate is used to determine the distance of piston movement. In Conrad, the flow rate is used to determine the amount of clogging of a filter. The integral of the flow rate of claim 20 is by no means equivalent to the flow rate of the cited references.

Therefore, applicants respectfully urge that claim 20, and those claims depending therefrom, patentably distinguish over the references of record.

Claims 27, 29, and 30 have been rejected under 35 USC §103(a) as being unpatentable over Kozaki in view of U.S. Patent No. 4,112,879 to Assenheimer et al. ("Assenheimer") and Conrad. The examiner contends that Kozaki does not disclose using the equation $K = \int_0^T Q dt$ to determine system status. Assenheimer has been cited for its alleged teaching of such an equation. The examiner further contends that Kozaki also does not teach determining a service life of the system, and Conrad has been cited for this teaching.

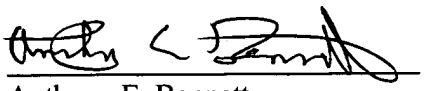
Applicants respectfully traverse the rejection of claim 27. As set forth above with respect to claims 1, 14 and 20, applicants submit that there is no motivation to combine Kozaki and Conrad. Furthermore, there is also no motivation in the references or in the art to combine these references with Assenheimer. Assenheimer is directed to optimizing the behavior of an internal combustion engine. The equation relied upon in the Office Action determines the volume of air taken for operating cycles and the volumetric efficiency of the system. Column 7, lines 33-45. This is unrelated to the operation in Kozaki or Conrad. The proposed modification uses only part of Assenheimer's volumetric efficiency equation. There is no reason why one skilled in the art would look to a disclosure concerning optimizing an internal combustion engine and its air flow calculations to extract an equation, or part thereof, for use in a suspension control system. In addition, there is no teaching to support modifying Kozaki to integrate the flow or otherwise use the equations of Assenheimer.

Furthermore, the proposed combination of references fails to teach each element of the rejected claims. The equation of Assenheimer has the integral of the air flow rate divided by the displacement volume of a cylinder. Column 7, lines 40-45. This is not the equation set forth in claim 27 of the present application. The rejection improperly discounts the entire equation and merely takes a portion of it in an attempt to support the rejection. There is no teaching in the prior art to dissect the equation as done in the present Office Action. Accordingly, applicants respectfully submit that claim 27, and those claims depending therefrom, patentably distinguish over references of record.

In view of the amendments and remarks set forth above, applicants respectfully request favorable reconsideration of claims 1, 3-6, 8-20, 22-27 and 29-31, consideration of new claim 32, and allowance of the application with claims 1, 3-6, 8-20, 22-27 and 29-32.

If the examiner believes that a telephone interview would be helpful in moving this case toward allowance, he is respectfully invited to contact applicants' attorney at the number set forth below.

Respectfully submitted,



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